

Appendix E-10: Carr-Nisqually

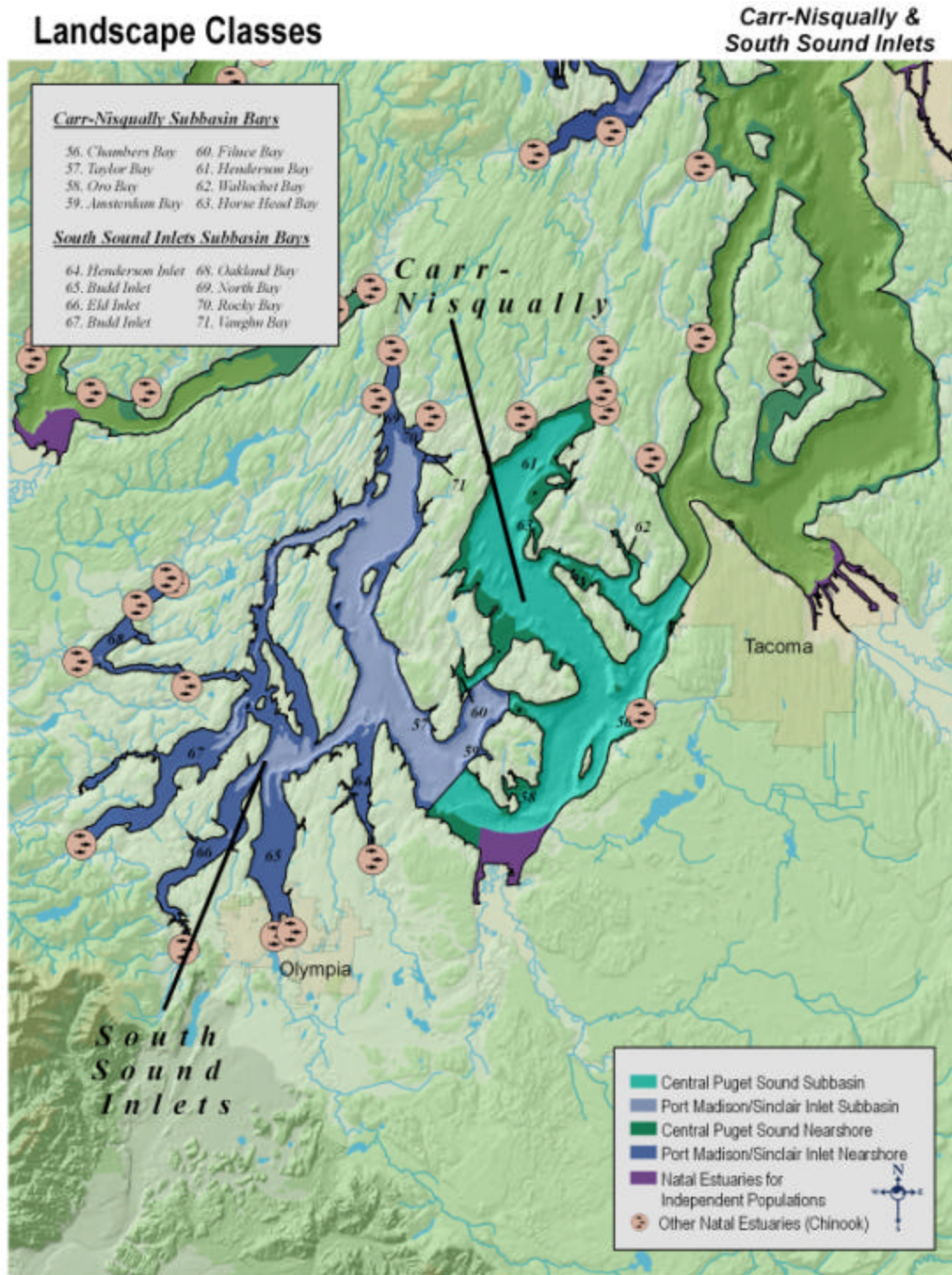


Figure E-10.1 Carr-Nisqually and South Sound Sub-basin Landscape Classes.

Landscape Functions

Carr-Nisqually & South Sound Inlets

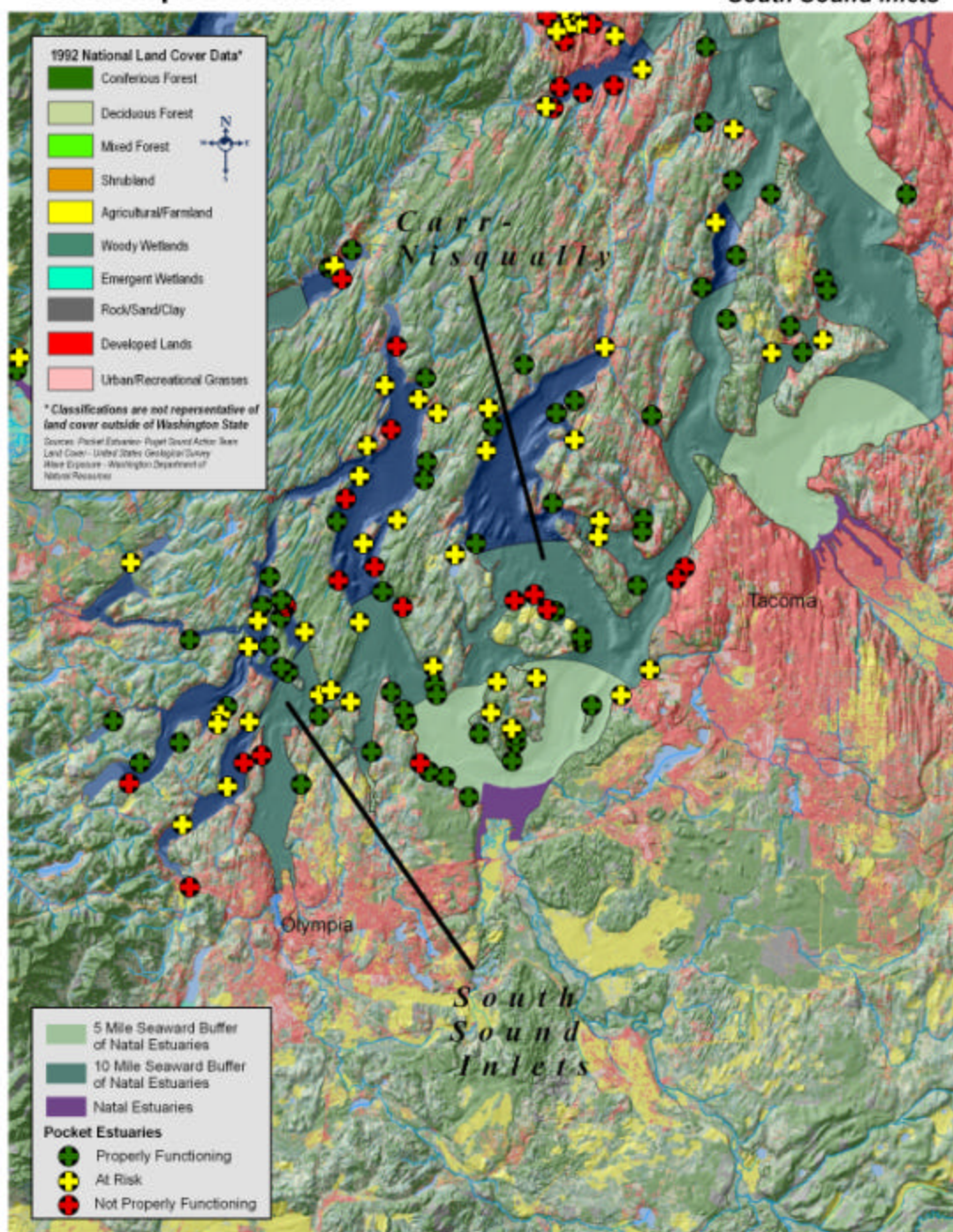


Figure E-10.2 Carr-Nisqually and South Sound Sub-basins Landscape Functions.

Figure E-10.4 Carr-Nisqually Sub-basin pocket estuary locations, likely Chinook functions, and observed stressors.

Pocket Estuary Identifier	Latitude	Longitude	Photo ID #		Freshwater (Y/N)	Likely Chinook Functions			Shoreline Development	Urbanization	Diking and Filling	Susceptibility to spills and discharges	Aquaculture related substrate alterations	Vulnerability to Sea Level Rise	Final Chinook Function Score			
						Feeding	Osmoreg.	Refuge										
CN1-Titlow	47.25	122.551	000817-155018	N					x		x				NPF	PF = Property Functioning		
CN2-Days Island	47.243	122.558	000817-155218	N	x			x	x	x	x		x	NPF	NPF=Not Properly Functioning			
CN3-Chambers Creek	47.187	122.58	000817-155538	Y	x	x	x	x		x	x			AR	AR=At Risk			
CN4-Steilacoom	47.171	122.605	000817-155822	Y	x	x	x		x	x				AR				
CN5-Ketron Is.	47.164	122.631	000923-122112	N	x		x							PF				
CN6-Beachcrest	47.106	122.739	000802-125642	N(?)	x			x						PF				
CN7-Big Slough	47.118	122.76	000802-125730	N	x			x						PF				
CN8-Carson Bay	47.145	122.731	000923-115300	N	x			x						PF				
CN9-Thompson Cove	47.129	122.701	000923-115436	N	x		x							PF/AR				
CN10-Oro Bay	47.14	122.698	000923-115958	N(?)	x			x						PF				
CN11-East Oro1	47.145	122.698	000923-120042	N	x									PF				
CN12-East Oro2	47.149	122.702	000923-120128	N	x			x			x			AR				
CN13-Johnson Landing	47.18	122.681	000923-120540	Y (?)	x	x	x	x						AR				
CN14-Hyde Point1	47.202	122.641	000923-113950	N	x			x						PF				
CN15-Hyde Point2	47.206	122.642	000923-114002	N	x			x						PF				
CN16-Still Harbor	47.221	122.666	000923-114550	N	x			x						PF				
CN17-McNeil Island1	47.222	122.673	000923-114616	N	x				x		x			NPF				
CN18-McNeil Island2	47.231	122.685	000923-114710	N(?)	x			x			x			NPF				
CN19-McNeil Island3	47.227	122.703	000923-114818	N					x		x			NPF				
CN20-Penrose Point	47.261	122.739	000803-145250	N				x						PF				
CN21-Mayo Cove	47.254	122.757	000803-145352	Y	x	x	x	x		x		x(recreational)		AR				
CN22-Sunshine Beach	47.318	122.732	000803-150128	N				x						AR				
CN23-Thompson Spit	47.333	122.727	000803-150212	Y	x	x	x	x						PF				
CN24-Glencove	47.344	122.731	000803-150308	Y	x	x	x	x		x				AR				
CN25-Sunrise Beach	47.371	122.7	000803-150634	Y	x	x	x	x						PF/AR				
CN26-Burley Lagoon	47.383	122.628	000803-151138	Y	x	x	x	x	x	x	x	x(appea		AR/NPF				
CN27-Henderson Bay	47.35	122.654	000803-152216	Y(?)	x	x	x	x						PF				
CN28-Allen Point	47.342	122.67	000803-152344	N	x			x	x					PF/NPF				
CN29-Rosedale	47.326	122.653	000803-152740	Y	x	x	x	x	x	x				AR				
CN30-Arletta	47.287	122.671	000817-144004	Y	x	x	x	x						PF				
CN31-Sunny Bay	47.277	122.628	000817-144104	Y	x	x	x	x		x				AR				
CN32-Wollochet1	47.279	122.589	000817-144526	Y	x	x	x	x						PF				
CN33-Wollochet2	47.271	122.59	000817-144542	Y(?)	x	x				x				PF/AR				
CN34-Hope	47.238	122.593	000923-112936	Y(?)	x		x	x	x	x				PF				
CN35-Ketners Point	47.267	122.629	000803-122956	N				x						AR				

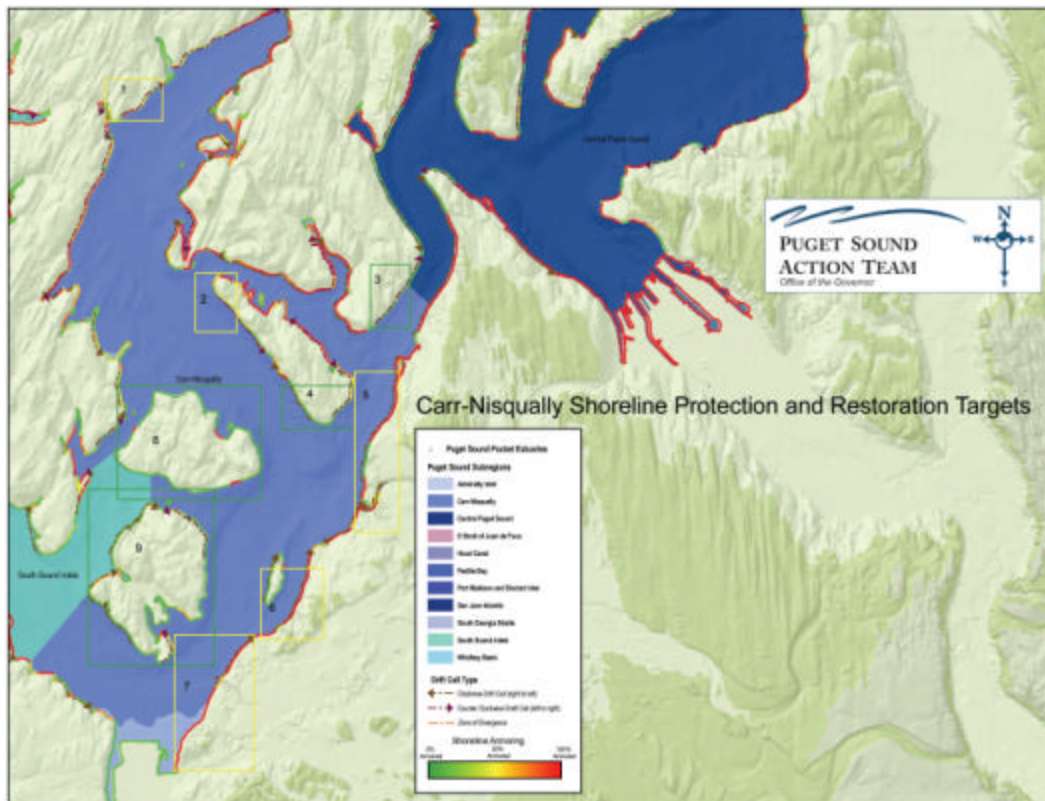


Figure E-10.5 Carr-Nisqually Sub-basin analysis of drift cells and shoreline armoring.

Carr-Nisqually

Box 1 – This small divergent drift cell contains large feeder bluffs terminating in two separate depositional spits forming the mouths of pocket estuaries. There is a small amount of armoring along residential sections that should be considered for restoration and education on shoreline stewardship.

Box 2 - This southward moving drift cell at the north end of Fox Island, while containing moderate amounts of residential development, is disrupted primarily by the Navy pier. Restoration of sediment transport processes through pier redesign should be considered.

Box 3 – This high bluff along Tacoma Narrows supplies sediments northward into the main basin of Puget Sound and is currently unarmored. Like the converging continuing south from Gig Harbor, continued protection of shoreline functions may require an aggressive education campaign among shoreline property owners and protection of its critical areas functions by Pierce County.

Box 4 – This is the feeder source for two diverging drift cells on the south side of Fox Island that, along with the drift cell described in box 2, supply sediment to a large portion of the island's shorelines.

Boxes 5, 6 and 7 – This shoreline, composed of two long northward drift cells (boxes 6 and 7) and a southward drift cell that includes the Chambers Creek area (box 5), is dominated by a single armoring feature, the Burlington Northern Railroad Line. The importance of this shoreline to fish migrating northward from the Nisqually suggests efforts should be pursued to restore some of the natural sediment transport functions through a number of means including beach nourishment, bypassing of sediment that falls onto the tracks during landslides and creating additional opening where historic pocket estuaries would have delivered deltaic sediments to that shoreline.

Boxes 8 and 9 – Due to the proximity of Anderson Island and McNeil Island to the Nisqually delta and their current unarmored state, every effort should be taken to continue a high level of protection from degradation to these shorelines. These two islands have numerous pocket estuaries and shallow, low gradient shorelines, which support Chinook functions from the Nisqually population and other parts of the sound. Pierce County should aggressively control additional shoreline armoring of waterfront properties on Anderson Island and continue advertising incentives like the Public Benefit Rating System to prospective waterfront property owners.